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B P I S A E RESEARCH ACTIVITIES

U.S. GOVERNMENT PRINTING OFFICE 1949
MAR 18 1949

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PLANT INDUSTRY STATION, BELTSVILLE, MD.

FEBRUARY 1949

FOR ADMINISTRATIVE USE ONLY

Russian Colored Cottons Offer Nothing New

Cotton varieties with naturally colored fibers advertised a few years ago by the U.S.S.R. as a new development appear to be only the brown linted forms already well known but not highly valued here. That is what Bureau cotton specialists find after an experimental study of eight lots of the cotton imported in 1946 by the Division of Plant Exploration and Introduction.

Scientists in the Cotton Division have known for many years of tropical cottons that produce naturally colored fibers ranging from light buff to deep rusty brown and also of green linted forms that occasionally appear in fields of white cotton in the United States. The color in these cottons fades rapidly on exposure and the fiber is inferior to white cotton in spinning value.

The introductions from Russia were planted at several places in our Cotton Belt. Those that matured appeared to be nothing more than the regular brown linted forms; one was an upland, another a sea-island type, and the other six were Asiatic cottons. Two of the Asiatic stocks did not germinate. Among the other four, three were late and produced little lint. The remaining Asiatic type was early and fruitful but not equal in yield to our white cottons. The sea-island form was late and low in yield. The upland was first of the Soviet group in yield but not up to American upland white cottons. The best Asiatic form and the upland type were grown at the Pee Dee Experiment Station, Florence, S.C., again in 1947 and 1948. The fiber colors of the two were medium shades of brown that faded on exposure to more drab or dingy shades. It is likely that the Asiatic form came from China and the upland, which resembles the Texas Big Boll group in plant habit, from Mexico or Texas.

Since all of these cottons appear to be introductions into Russia from other parts of the world, they probably are a part of the collections made by the Russian scientist, Vavilov, and associates in extensive explorations in the 1920's. Efforts to obtain seeds of the varieties producing fibers in other colors reported have been without success.

Round-up of Agricultural Research with Radioactive Isotopes

These are the highlights of a comprehensive report on agricultural research with radioactive phosphorus as tracers presented to representatives of the fertilizer industry in a conference in Washington, January 26.

Investigations using radioactive phosphorus to trace fertilizer uptake in 13 different crops show a wide variation in the utilization of phosphorus by crops. Potatoes depend heavily on the fertilizer throughout the growing season. Corn absorbs a high proportion early in the growing period. The type of root system appears to make the difference.

The research has shown that the actual amount of phosphorus used by plants is relatively low. Cotton, corn, tobacco, or soybeans use less than 10 percent of an application of 100 pounds of P_2O_5 . Potatoes use a somewhat higher percentage.

Placement studies are showing methods of increasing the efficiency of applied phosphorus. Sugar beets fertilized with a band 4 inches to the side and 4 inches below seed level did not use the phosphorus until the plants were 5 inches high, but those treated with fertilizer mixed in the seed row 4 inches wide and 4 inches deep used the fertilizer from the beginning of growth.

Superphosphate and calcium metaphosphate were found to be the most efficient of those tested. Sometimes alpha tricalcium and dicalcium phosphate match them, but in other tests they lag far behind.

Probably the next radioactive elements to be used in field experiments will be calcium and sulfur. Initial experiments with these elements will be started in 1950. The applied research will certainly include liming experiments in order to obtain direct measurement of the utilization of applied calcium. Applied research with minor elements will probably develop along the lines indicated for phosphorus, calcium, and sulfur.

In addition to field studies, cooperating stations have undertaken fundamental laboratory studies on separate phases of the problem of the behavior of phosphorus in the soil. Problems of the naturally acid soils of the humid regions have been represented in the studies in North Carolina and New York. The red and yellow soils of the Southeast and the major row crops of the area have been included in North Carolina. Problems of hay and pasture farming on the soils of the Northeast, including radioactive manure, have been a part of the New York program. Calcareous soils and their problems are represented in Colorado, and the Corn Belt with its soils at Iowa. Iowa and New York are giving considerable attention to organic phosphorus.

The radioactive fertilizers for all stations are manufactured by the scientists at Beltsville, who participated actively in the entire program and are helping to coordinate it. Facilities for analyzing the radioactive samples from all locations are provided at the North Carolina station. Exchange of information between the Bureau and the stations has been free and rapid.

Dr. Robert M. Salter presided at the opening session of the conference. Congressman Charles Melvin Price of the Joint Congressional Committee on Atomic Energy was the first speaker. Others on the program were J. H. Jensen of the Atomic Energy Commission; R. W. Cummings, associate director, W. L. Nelson, and N. S. Hall of the North Carolina Experiment Station; Richard Bradfield of the New York Station; and Dr. F. W. Parker, Dr. S. B. Hendricks, and W. L. Hill of the Bureau.

ON THE CALENDAR

February 23-24 Sixth Annual Meeting of the Potomac Division,
 American Phytopathological Society,
 Plant Industry Station, Beltsville, Md.

February 26 Seeds to Save Soil - broadcast on the
 National Farm and Home Hour, NBC, 1 p. m. EST

February 28 - Second annual meeting of collaborators,
March 2 Soils and Fertilizer Research,
 Plant Industry Station, Beltsville, Md.

Dr. Salter Outlines Research Problems of Southeast

Finding answers to challenging problems peculiar to the Southeast sets up an imposing task for agricultural science.

Here are a few of the needs in forage crops, cereals, tobacco, and soils outlined by Dr. Robert M. Salter, chief of the Bureau, in a talk before the Georgia Section of the American Society of Agronomy and Soil Science Society of America at Athens, January 19:

(1) Thorough testing of strains of tall fescue for winter pasture and many varieties and strains of Bahia grass and big trefoil for summer pasture crops.

(2) Genetic, cytogenetic, and forage improvement studies on southern grasses and legumes. Hybrids of the Paspalum species suggest potentialities if economic methods of vegetative propagation or satisfactory seed producing strains can be developed.

(3) Exploration of the native habitat of Sericea lespedeza to bring together a wide range of phenotypes as a foundation for a breeding program.

(4) Additional investigations on methods of harvesting and conditioning seed, types of storage structures, and respiratory activity of seed as affected by temperature, humidity, and treatment.

(5) Studies of wheat and oat varieties best suited for grazing.

(6) The development of hardy varieties of barley.

(7) Investigations to determine the best methods of cultivating, harvesting, handling, and storing forage and grain crops.

(8) Research on the best methods of producing foundation stock of hybrid corn seed.

(9) Development of resistant combine-type grain sorghums.

(10) Creation of cotton varieties suited to particular uses.

(11) Breeding tobacco with multiple-disease resistance.

(12) Investigations to find how much fertilizer can profitably be used on the latest improved varieties when the grower follows the best known methods of seedbed preparation, planting, and cultivation, controls insects and diseases, and uses improved measures to conserve water and control erosion.

(13) Research to better determine plant nutrient requirements and fertilizer placement and rates and placement of lime.

(14) A major challenge is to synthesize the product of our soil and crop research into a sound farm management system.

Advances in Control of Tree Diseases

The Division of Forest Pathology was established in 1907 to investigate and devise control measures for diseases of forest and shade trees and decays and discolorations of forest products. It took over timber-disease studies started a few years earlier by the Bureau's Mississippi Valley Laboratory.

Chestnut blight was the first major problem under study. This introduced disease was so deadly and spread so rapidly that control was not practicable in the East. Research results made it possible, however, to predict the rate of spread and to use much of the timber before it could be destroyed by the blight. Spread of the blight on the Pacific Coast was prevented by plant quarantines and by a program of intensive inspection and eradication. Today forest pathologists are making extensive plantings of disease-resistant Asiatic chestnuts and are developing and testing hybrids of Asiatic and American chestnuts to replace the susceptible American species.

Pathologists are selecting and breeding elms for resistance to Dutch elm disease and phloem necrosis, and mimosas for resistance to wilt.

The scientists are also selecting and testing pines resistant to white pine blister rust, another introduced disease, that menaced white pine stands soon after the turn of the century. The Division has played a major part in developing control measures, now used by other agencies, through eradication of the alternate hosts, currants and gooseberries. Control measures have been made more practicable in the West by predicting the spread of rust on the basis of climatic conditions.

In combating heart-rot fungi of forest trees, the Division has made important contributions in developing recommendations on mixtures of species, stand density, age of cutting, and selection of high-risk trees for removal in thinning and logging operations.

The Division has developed a number of measures for reducing losses from disease in forest nurseries. Among these are surface acidification of conifer seedbeds, prevention of damage from extremes of heat and moisture, and sprays with fungicides or iron compounds.

The possibility of using fungi that cause pitch canker of pine as stimulants for gum flow and pitch infiltration of turpentine and other pines is under study in the Southeast.

Other forest-tree problems under study in the Division include the littleleaf and fusiform rust of pine in the South; the epidemic dying of birch in the Northeast; pole blight of western white pine in the Northwest; damage by dwarf mistletoe in western coniferous forests; root rots, cankers, and leaf casts in various forest regions; and rate of deterioration of insect-killed and fire-damaged timber.

Canker stain of London planetrees is caused by a fungus that enters the tree through wounds or even slight abrasions of the bark. It is spread largely through contaminated pruning tools and wound dressings. It can be controlled by disinfecting pruning tools and equipment used on diseased trees and by using a wound dressing of the gilsonite-varnish type fortified with 0.2 percent phenylmercury nitrate.

In research on stain and decay of wood, Division scientists have developed fungicidal dips costing only a cent a gallon. These are now used extensively to protect lumber during seasoning. Another study is designed to determine the usefulness of soil cover under basementless houses in preventing decay.

Gray Notes Increasing Mechanization on European Farms

Back from $2\frac{1}{2}$ months in Europe and North Africa with an ECA mission to study farm machinery needs, Roy B. Gray, head of the Farm Machinery Division, reports increasing mechanization of European farms and a crying need for repair parts in practically every country visited. These included France, Holland, Denmark, Germany, England, Italy, Tunisia, Algeria, Greece, and Turkey.

Comparing observations made from 1910 to 1920, when he represented the International Harvester Company in Europe, and in 1936, when he was on a field trip for the Bureau of Agricultural Engineering, Mr. Gray notes changes both in the need for machinery and in the types desired.

Throughout most of the agricultural regions, Mr. Gray found an interest in deep plowing that calls for heavy tractors. Citrus and olive growers in Italy and North Africa plow 3 feet deep. Two-foot plowing is used in some sections of England to loosen and aerate the soil and in parts of Italy to provide underdrainage for subterranean springs. Wheat acreages in Africa and Turkey are often plowed 10 or 12 inches deep. The climate is semi-arid and the ground hard. Plowing is done right after harvest to take advantage of September rains. Many European farmers plow three times before planting root crops. The first time about 3 inches deep to kill weeds, then 6 or 8 inches, and finally 10 or 12 inches for planting.

Thirty years ago English farmers demanded two-plow tractors. Germans wanted large tractors. Today English operators are interested in large tractors of the crawler type. The German demand is for a tractor that can be used for both field work and hauling trailer loads of produce along the highways.

Missouri Valley Development Calls for Soil Surveys

Preliminary studies for soil surveys in areas of the Missouri River basin proposed for irrigation make up one of the first steps in the comprehensive plan now being drawn up for agricultural development of the region, reports Dr. C. P. Barnes of the Division of Soil Survey.

Dr. Barnes represents the Agricultural Research Administration in the working group assigned by Secretary Brannan to plan supporting research for the development program. He is also a member of the Federal-State committee to develop soil survey plans for the region.

The Department's task force has outlined a 6-year work schedule for its contribution to the Missouri Valley development plan now being worked out by representatives of five Federal departments and nine States. This is a coordinated approach to the problems of flood control, irrigation agriculture, and soil and water conservation in the basin of the 2,475-mile Missouri River.

Annual Report Highlights New Technology Now in Practical Use

Off the press in January, the 1948 report of Dr. Robert M. Salter, chief of the Bureau, features an introductory round-up of production techniques developed through research and now in practical use on farms.

Pointing out that new techniques represent the "pay-off" on research that has been carried on over many years, Dr. Salter gives credit to the many individual scientists whose enterprise has made these new tools available to farmers. He adds that the cooperative approach to research problems has played an especially important part in the achievements of this Bureau.

The introduction focuses attention on new chemicals now used in agriculture. Emphasizing the great promise of these developments, Dr. Salter notes that the extreme potency of some of the new materials indicates dangers that may attend their improper use. Science, in its effort to meet the demand for new knowledge, must not overlook the dangers of inadequate knowledge. It is the duty of science to develop safe limits, controls, antidotes for use with its new products or procedures.

Outstanding research findings by the 18 Divisions of the Bureau during the past year are covered in the 90-page report.

Cold Damage at U. S. Date Garden

Dr. J. R. Furr reports damage to leaves of date palms at the United States Date Field Station, Indio, Calif., where temperatures reached a low of 22.5°, 20°, and 22.5° F. on January 4, 5, and 6. The damage showed up immediately in a burning of pinnae in exposed locations, especially on tall palms. The loss of leaves will probably make it necessary to reduce the number of bunches below the normal load on mature palms and to prevent fruiting of those just coming into bearing.

Most of the citrus crop at the Station will probably be lost. It appears that mature trees will lose most of the leaves and some twigs but very little old wood. The young citrus varietal planting and the nursery trees were protected with palm leaf wraps so that only the tops were damaged.

Flame Photometer Used in Tung Studies

Dr. F. S. Lagasse and coworkers at the Gainesville (Fla.) tung laboratory are using a flame photometer attachment to the Beckman spectrophotometer in the routine analysis of tung leaves for potassium and calcium and also in a limited way to determine the exchangeable potassium and calcium in soils from different areas. Comparisons with determinations run by chemical methods show excellent agreement.

The instrument is convenient to operate. One analyst can run about 20 determinations an hour, taking duplicate and occasionally triplicate readings. Further tests will show the possibility of using the flame photometer to determine some of the other elements.

Row Method of Fumigation Varied Successfully

A promising variation of the row method of fumigation to control root-knot nematodes was recently tested by Dr. J. R. Christie, Division of Nematology, in experiments conducted in cooperation with the Paul D. Dikman Farms at Ruskin, Fla.

For some time it has been found practical and economical when fumigating row crops to apply the fumigant 6 inches beneath the row prior to planting. An earlier practice has been to space the applications equally over the entire area.

At the Dikman farms, Dr. Christie applied the fumigants in two streams--12 inches apart--along each row. Later he set a crop of tomato plants midway between the rows, which were spaced $4\frac{1}{2}$ feet apart. He used D-D, a dichloropropene-dichloropropane mixture, at 9 gallons per acre, and Dowfume W-40, an ethylene dibromide mixture, at 3 different dosage rates.

Results show that root-knot can be controlled in this manner at a comparatively low cost for the material. Had the area been treated solid at comparable application rates, slightly more than twice as much of the material would have been required.

In this experiment the D-D gave superior control, reducing the infection 85 percent. Dowfume, applied at 5, 6, and 9 gallons per acre, reduced infection 41 percent, 12 percent, and 35 percent, respectively.

Irregularity in Tung

New light on a severe drop in the growth rate of transplanted tung trees comes from a study by Dr. M. S. Neff, at Cairo, Ga. The drop is of considerable practical importance because it is closely correlated with the total linear growth of the trees.

The transplanted trees characteristically exhibit two sigmoid growth curves rather than a single one normally expected for most plants during the first growing season. Dr. Neff has observed that this is caused by a drop in growth rate during spring. This comes approximately at the time of spring droughts, but is not necessarily associated with them nor does it seem to depend on food reserves in the trees. Dr. Neff has found that trees dug and stripped of roots and shoot growth during this period resumed active linear growth upon replanting. This occurred at a time when undisturbed check trees were growing very slowly.

Dr. Neff believes the second drop in growth is related to the production of considerable leaf surface in early spring. He finds that during the peak of early spring growth top growth was 19 times greater than root growth. During the period of slow growth which followed, top growth was only three times greater than that of the roots. From this he concludes that linear top growth is slowed down because of the temporary difficulty in absorbing and translocating water in sufficient quantities to satisfy vastly increased transpiration requirements.

Rootstock Affects Chemical Composition of Orange Leaves

From Florida comes evidence that citrus rootstock, already known to influence adaptation to soils, scion vigor, resistance to certain diseases, and fruit quality, also affects the chemical composition of orange leaves.

That is the finding in studies by Dr. Paul F. Smith, Dr. Walter Reuther, and Alston W. Specht. Valencia orange trees grown on six different rootstocks show significant differences in percentages of nitrogen, potassium, calcium, magnesium, phosphorus, manganese, copper, boron, zinc, and iron in the leaves. The induced variations in the micro-nutrient elements were larger than those for the macro-nutrient elements. For example, with Rusk citrange rootstock, Valencia scion leaves contained 1.76 percent potash and 126 parts per million iron in dry matter. With grapefruit rootstock the percentage of potash was 2.62 and of iron 59 p.p.m.

The influence of rootstock appears to be more pronounced in citrus than in other fruit trees. This may be due partly to the wide difference in citrus species used as rootstocks and partly to the essentially clonal character of citrus stocks produced, as they are, largely from nucellar seedlings.

Low-Cost Porous Concrete Offers Promise For Crib Construction

Laboratory tests of plain and reinforced concrete slabs, prepared by E. G. Molander, Division of Farm Buildings and Rural Housing, indicate the possibility of using a low-cost porous concrete for false floors in corncribs and bins equipped with forced air-driers.

Mr. Molander prepared 24 slab specimens for testing. Some of these were reinforced with either plain or barbed wire in various patterns. The slabs were 24 inches square, 3 inches thick, and weighed about 100 pounds each.

The Bureau of Standards made the tests to determine transverse strength and rate of air passage through the slabs. Results show that slabs made of a low-cost mixture of nine parts 3/4-inch gravel to one part of cement had a load-bearing capacity of from 600 to 1,000 pounds per square foot on a 20-inch clear span and an air flow high enough for satisfactory drying of corn in cribs with heated air. The Division now plans to test the material in actual field construction and use.

Stem Rust Resistance Well Established in Spring Wheats

Ninety percent of some 18 million acres of spring wheat grown in the Northern Plains States are planted to stem-resistant wheats, developed, tested, distributed, and grown during the 20 years the coordinated wheat improvement program has been set up.

Speaking recently before a group of 130 North Dakota farmers at Plant Industry Station, J. A. Clark pointed out that, on the basis of conservative estimates, these new varieties have added between 600 and 650 million bushels to the nation's harvest in the last 7 years.

The stem rust resistant spring wheat varieties distributed since 1934 include Thatcher, Pilot, Rival, Renown, Regent, Redman, Vesta, Henry, Mida, Newthatch, Cadet, Carleton, Stewart, and Vernum.

Dairy Arrangement Saves Time and Labor

A study of 50 dairy farms in Illinois, Wisconsin, and Indiana provides the basis of a paper, "Simplifying Dairy Chores," prepared by Harry L. Garver and Thayer Cleaver, agricultural engineers, for the Twelfth International Dairy Congress, to be held in Stockholm, Sweden, next August.

The findings show that the dairyman spends from 65 to 80 percent of his time in chores, most of which are repetitive. That carefully planned work methods, improved design of buildings, and different types and arrangement of tools and equipment will contribute to labor saving is shown by the before-and-after remodeling story of one dairy farm. Before remodeling, it took two men 50 minutes to milk 19 cows. After this particular lay-out was improved, one man could milk 20 cows in 56.7 minutes.

Burned Cane Should Not Be Stored

Unless milled promptly, cane that has been burned to remove trash may show high losses in sugar content. The need for mechanical detrashers to reduce these losses is underscored by findings in an RMA project now under way by sugar plant specialists at the field station in Houma, La.

Burning the freshly cut cane--the common and, in fact, the only practical method now available for removing leaves and trash--may destroy or impair many of the important physiological functions of the stalks. This injury then permits the invasion of fungi. Their action, increased considerably in wet weather, causes rapid loss of sugar and results in the formation of undesirable nonsugars.

Mechanical Detrasher Under Test

R. M. Ramp of the Farm Machinery Division has designed and built a mechanical sugarcane detrasher now under study at the laboratory in Houma. It consists of a pair of rollers planned as a part of a complete machine that would cut the stalks from the grounds and then rub the leaves and trash from the top, leaving the stalks ready for the mill.

Citrus Storage Study Planned

Plans for a comprehensive new project on the storage of citrus fruits were developed at a conference held at Beltsville, January 10-14.

Here for the meeting with headquarters personnel were Dr. P. L. Harding, Orlando, Fla., Dr. J. S. Wiant, New York, N. Y., and A. L. Ryall, Harlingen, Tex. Also taking part in the conference was a former staff member, H. C. Diehl, now director of the Refrigeration Research Foundation, Berkeley, Calif. The foundation is cooperating in the storage study.

NOTES ON PERSONNEL

New Posts for Moseman, Starkey

Promotions have been announced for two members of the administrative staff. Dr. A. H. Moseman has been named special assistant to the Chief of the Bureau, a position formerly held by Dr. P. V. Cardon. J. H. Starkey succeeds Dr. Moseman as assistant to the Chief.

Dr. Moseman, who will be responsible for research program planning and coordination and will serve as chairman of the Research Advisory Committee, has been a Bureau employee since his college days. A native of Nebraska, he holds the bachelor's and master's degrees from the University of Nebraska and a Ph.D. from the University of Minnesota. Before coming to Plant Industry Station as assistant to the Chief in 1944, he was in charge of seed flax improvement work conducted by the Bureau in cooperation with the Minnesota station.

Mr. Starkey came to the Bureau as assistant personnel officer in 1941. He has been head of Personnel Services since 1945. Mr. Starkey was born in Rockville, Md. He is a graduate in agriculture of VPI. His government experience includes 2½ years with the Farm Security Administration and a brief period in the employment division of the Office of the Secretary of Agriculture. He served 3 years in the Navy and was placed on inactive duty status with the rank of lieutenant.

J. P. McAuley has been named acting head of Personnel Services. He joined the Bureau staff in 1947, coming from the personnel division of PMA. A native of Tennessee and a graduate in agriculture from the University of Tennessee, he began work for the AAA in April 1942. He served as a communications officer in the Navy during the war.

Childers Heads Information Division

New head of the Information Division is Louis E. Childers. He succeeds J. K. McClarren, who transferred January 10 to the Bureau of Animal Industry to head information work. Mr. McClarren's transfer also carries a promotion and is recognition of the fine work he has done as head of the information program of this Bureau since October, 1945.

A graduate in agricultural journalism of Kansas State College, Mr. Childers came to the Department in 1937 from Oklahoma City, where he was associate editor of the Farmer-Stockman. At one time he also was Extension Service editor in South Dakota.

In the Department Mr. Childers has served successively as publications editor for Forest Service, scientific editor of Department publications, and assistant head of Press Service in the Office of Information. Since January 1946, he has been assistant head of the Information Division of this Bureau assigned to the Agricultural Engineering Divisions.

Krantz on Farm and Home Hour

Dr. B. A. Krantz, Division of Soils Management and Irrigation, described the role research has played in increasing North Carolina corn yields in a National Farm and Home Hour broadcast from Raleigh over the NBC network, January 29.

Reeve and Nelson Granted Leaves For Graduate Work

Two staff members of the Soils Division have been granted leaves of absence to continue graduate work. They are Ronald C. Reeve, assistant irrigation engineer at the Regional Salinity and Rubidoux Laboratories, Riverside, Calif., and Reuben E. Nelson, associate physicist, Plant Industry Station. Reeve will complete graduate work at the University of Iowa, and Nelson will take further work toward a Ph.D. at Ohio State University. Ross K. Peterson, Logan, Utah, has been appointed to serve in Reeve's place during his absence.

McMurtrey and Krantz Contribute To New Book

Two Bureau scientists, Dr. James A. McMurtrey, Jr., and Dr. B. A. Krantz are among 12 contributors to a new book, "Diagnostic Techniques for Soils and Crops," just published by the American Potash Institute of Washington, D. C.

In addition to a chapter on "Visual Symptoms of Malnutrition in Plants," Dr. McMurtrey has prepared an appendix, describing visual symptoms in each major crop of deficiencies of each element.

Dr. Krantz is co-author with Dr. W. L. Nelson and Dr. Leland F. Burkhardt of the chapter, "Plant-Tissue Tests As A Tool in Agronomic Research."

McNeal Transfers to Bozeman Station

F. H. McNeal has transferred to the Montana Station, Bozeman, Mont., where he is taking over the cooperative cereal improvement work. He replaces Dr. R. H. Bamberg, who recently transferred to the Bureau of the Budget, Washington, D. C. For the past two years, Mr. McNeal has conducted the cereal research at the Pendleton Branch Experiment Station, Oreg., during the absence of J. F. Martin on an assignment with the military government at Seoul, Korea.

Jefferson and Blume to Soils Staff

Two new staff members have been assigned to the Atomic Energy project of the Soil Management and Irrigation Division at Plant Industry Station. They are Merrill E. Jefferson, a physicist, formerly of the BAIC Regional Laboratory, at New Orleans, whose work will be concerned with safety and health measures, and James M. Blume, soil scientist, who comes to the Division from graduate work at the University of California.

Wright and Heinze Present Exhibit

R. C. Wright and Dr. P. H. Heinze, transportation and storage specialists, attended the annual meeting of the National Potato Chip Institute in Chicago, January 25-27, and presented an exhibit showing the suitability of different varieties of potatoes for making chips. The exhibit also showed the effects of different storage temperatures for raw stock on chipping quality.

Cannon Assumes Duties at Logan, Utah

Dr. Orson L. Cannon, formerly in charge of crops research for the H. J. Heinz Co., at Bowling Green, Ohio, has joined the Bureau staff and is stationed at Logan, Utah. He takes the place of the late Dr. H. L. Blood, who conducted research on tomato diseases in the development of tomatoes resistant to curly top, in cooperation with the Utah Agricultural Experiment Station.

Dr. Rose Returned to Duty

Dr. D. H. Rose, who retired December 31, was restored to duty status January 5 under special authorization by Secretary Brannan to prepare a digest of published information on the harvesting, handling, and transportation of tomatoes. This is an RMA project. Dr. Rose served for more than 30 years in the Division of Fruit and Vegetable Crops and is an authority on storage and transportation problems.

Miss Johnson Assigned to Fiber Report

Miss Falba L. Johnson, chief editor of the Journal of Agricultural Research, is on special assignment to the Division of Cotton and Other Fiber Crops and Diseases to assist Dr. B. B. Robinson in the preparation of informational material on plant fibers other than cotton. The project is cooperative with the Office of Naval Research.

Veteran Education Under G. I. Bill of Rights

Veterans interested in taking advantage of educational aid under the G. I. Bill of Rights should consult local representatives of the Veterans Administration, advises the Personnel Division.

The Department of Agriculture encourages its employees to get additional education whenever there is an opportunity and need. Under the G. I. Bill, the veteran must begin his training program within 4 years after his discharge or before July 25, 1951. He may continue until it is completed, provided he does so within 9 years after discharge but before July 25, 1956.

Results of Tests for Agricultural Scientists To Be Announced

Employees now holding war service or temporary indefinite appointments who took the examination for agricultural research scientists are asked to notify their Division heads as soon as they receive their grades. This will make it possible to have their names flagged for certification to this Bureau when within reach on the register.

The Civil Service Commission reports that results of the examination will probably be announced and the register set up early in February.

PUBLICATIONS

Departmental

Farmers Bulletin 1438	Diseases of Cabbage and Related Plants (rev.)
Farmers Bulletin 2003	Legume Inoculation: What It Is, What It Does
Technical Bulletin 970	Fiber and Spinning Properties of Cotton
Technical Bulletin 972	Vegetable-Seed Storage as Affected by Temperature and Relative Humidity

Recent Articles in Outside Publications

Authors of research articles in outside journals are urged to report actual publication promptly to their Division representative. Indicate the precise authorship, title, periodical, and date of the issue containing the article. This is the only way we can keep a current and complete list of publications.

Methods of Applying Fertilizer. Anderson, M. S. / Bulletin des Engrais, Paris, France, November 1948.

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Bower, C. A., and Huss, R. B. Rapid Conductometric Method for the Estimation of Gypsum in Soils. *Soil Sci.*, September 1948.

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Hessler, L. E., Merola, G. V., and Berkeley, E. E. Degree of Polymerization of Cellulose in Cotton Fiber. Textile Research Jour., October 1948.

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Meek, W. E. Progress and Problems Across the Cotton Belt--USDA National Project. In Progress Through Machines. Second Ann. Beltwide Cotton Mechanization Conf. Proc., October 14-16, 1948.

Robinson, W. O., and Edgington, G. Toxic Aspect of Molybdenum in
Vegetation. *Soil Science*, October 1948

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Ryall, A. L., and Godfrey, G. H. Dip and Gas Treatments for the Reduction of Post-Harvest Decay in Texas Lemons. *Phytopathology*, December 1948

Schaal, L. A. The Reaction of Pawnee and Bliss Triumph Potatoes to Certain Physiologic Races of *Actinomyces Scabies*. *Amer. Potato Jour.*, December 1948

Smith, N. R. Microbiology of Soil. *Ann. Rev. Microbiol.*, December 1948

Turner, A. W. Importance of Newly Developed Methods to Process and Store Farm Crops. *Edison Elec. Inst.*, December 1948

Turner, A. W. Current Public Research Indicates New Markets. *Impl. and Tractor*, January 8, 1949

Wilcox, L. V. The Quality of Water for Irrigation Use. *U. S. Dept. Agr. Tech. Bul.* 962, September 1948

The following articles appear in 1947 Soil Science of America Proc. (Pub. in November 1948):

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